11490

Western Great Plains Shortgrass Prairie

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
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Vegetation Type

Herbaceous

Map Zone

28

Geographic Range

Geographic area: Occurs in the southern Great Plains from southeastern Colorado east through Kansas and south through western OK, eastern New Mexico, and western Texas.

Biophysical Site Description

This type typically occurs on plains and draws or on gently rolling uplands of the southern Great Plains. In New Mexico and Colorado, elevations range from 1,500-2,060m. Precipitation ranges from 12-14in and occurs predominantly during the summer.

Vegetation Description

Vegetation is shortgrass-dominated with midgrass inclusions: little bluestem, blue grama, buffalo grass, needle-and-thread, and three-awns, with intermingled forbs and scattered patches of shrubs, such as four-wing saltbush, broom snakeweed, rubber rabbitbrush, and several prickly pear species (*Opuntia*), with isolated pockets of sandsage. Winterfat occurs on calcareous soil. Western wheatgrass occurs in swales.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| BOGR2 | *Bouteloua gracilis* | Blue grama |
| BUDA | *Buchloe dactyloides* | Buffalograss |
| BOHI2 | *Bouteloua hirsuta* | Hairy grama |
| HECO26 | *Hesperostipa comata* | Needle and thread |
| BOCU | *Bouteloua curtipendula* | Sideoats grama |
| MUTO | *Muhlenbergia torreyana* | New jersey muhly |
| PASM | *Pascopyrum smithii* | Western wheatgrass |
| YUCCA | *Yucca* | Yucca |

Species names are from the NRCS PLANTS database. Check species codes at http://plants.usda.gov.

Disturbance Description

Fire return interval (FRI) could be extended by ungulate grazing. Concentrations of ungulates could increase the percent of the landscape dominated by shrubs and forbs compared with reference conditions. FRIs are now in the range of 30+yrs. Episodic disturbance caused by insect infestation (grasshoppers, range caterpillars, and Mormon crickets).

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 13 | 83 | 2 | 35 |
| Moderate (Mixed) | 60 | 17 |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 10 | 100 |  |  |

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

None

Adjacency or Identification Concerns

Higher-elevation sites of this type border the juniper steppe type.

Issues or Problems

Native Uncharacteristic Conditions

Comments

This model is based on the Rapid Assessment (RA) model R3PGRS, which was reviewed by B. Baker (bakerwl@wyo.edu). Minor edits made on 6 May 2005 by Mike Babler (mbabler@tnc.org), changed some species and Class B: 15% to 20%, Class C: 75% to 65%, and Class D: 5% to 10% to better match VDDT model output.

The RA model was originally based on the FRCC model PGRA6. Reviewer suggests combining all plains grasslands. Because of species composition and class differences, 1147 and 1149 were not combined.

Succession Classes

**Mapping Rules**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Upper Layer Lifeform** | **Height (m)** | **Canopy Cover (%)** | | | | | | | | | |
| **0-10** | **11-20** | **21-30** | **31-40** | **41 - 50** | **51-60** | **61-70** | **71-80** | **81-90** | **91-100** |
| Herb | 0-0.5 | A | A | A | B | B | B | B | UN | UN | UN |
| Herb | 0.5-1.0 | D | D | C | B | B | B | B | UN | UN | UN |
| Herb | >1.0 | D | D | C | B | B | B | B | UN | UN | UN |
| Shrub | 0-0.5 | C | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | C | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | C | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | >3.0 | C | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 0-5 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | B | B | UN | UN | UN | UN | UN | UN | UN | UN |

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

**Description**

Class A 5 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOGR2 | Bouteloua gracilis | Blue grama | All |
| BUDA | Buchloe dactyloides | Buffalograss | All |

Description

Dominated by resprouts and seedlings of grasses and post-fire-associated forbs. Low to medium height with variable canopy cover. This type typically occurs where fires burn relatively hot in classes B and C, where grazing has been heavy.

*Maximum Tree Size Class*  
None

Class B 25 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOGR2 | Bouteloua gracilis | Blue grama | Upper |
| BUDA | Buchloe dactyloides | Buffalograss | Upper |

Description

Herbaceous cover is dominant, but scattered shrubs may be present. Generally associated with more productive soils but can be caused by cumulative high-moisture seasons increasing the cover and productivity of class C. Low to medium height.

*Maximum Tree Size Class*  
None

Class C 58 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOGR2 | Bouteloua gracilis | Blue grama | Upper |
| BUDA | Buchloe dactyloides | Buffalograss | Upper |

Description

Herbaceous cover is dominant, but scattered shrubs may be present. Typically located on the ridges, rocky areas, or the more cobbly or gravelly soils where patches may be missed by fire. Scattered shrubs may be present.

*Maximum Tree Size Class*  
None

Class D 12 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOGR2 | Bouteloua gracilis | Blue grama | Upper |
| BUDA | Buchloe dactyloides | Buffalograss | Upper |

Description

Herbaceous cover is dominant, but scattered shrubs may be present. Typically located on the ridges, rocky areas, or more cobbly or gravelly soil where patches may be missed by fire.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 4 |
| Late1:OPN | 0 | Late1:OPN | 999 |
| Mid1:CLS | 3 | Mid1:CLS | 999 |
| Mid1:OPN | 5 | Mid1:OPN | 999 |

Probabilistic Transitions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Disturbance Type** | **Disturbance occurs In** | **Moves vegetation to** | **Disturbance Probability** | **Return Interval (yrs)** | **Reset Age to New Class Start Age After Disturbance?** | **Years Since Last Disturbance** |
| Alternative Succession | Early1:ALL | Mid1:CLS | 0.01 | 100 | Yes | 0 |
| Mixed Fire | Early1:ALL | Early1:ALL | 0.02 | 50 | No | 0 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.06 | 17 | Yes | 0 |
| Alternative Succession | Mid1:OPN | Late1:OPN | 1 | 1 | Yes | 25 |
| Mixed Fire | Mid1:OPN | Mid1:OPN | 0.01 | 100 | No | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Alternative Succession | Mid1:OPN | Mid1:CLS | 0.05 | 20 | Yes | 0 |
| Replacement Fire | Mid1:OPN | Mid1:OPN | 0.08 | 13 | No | 0 |
| Alternative Succession | Mid1:CLS | Late1:OPN | 1 | 1 | Yes | 20 |
| Replacement Fire | Mid1:CLS | Mid1:OPN | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:CLS | 0.02 | 50 | No | 0 |
| Replacement Fire | Mid1:CLS | Mid1:CLS | 0.06 | 17 | No | 0 |
| Wind or Weather or Stress | Mid1:CLS | Mid1:OPN | 0.075 | 13 | Yes | 0 |
| Mixed Fire | Late1:OPN | Mid1:OPN | 0.04 | 25 | Yes | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.04 | 25 | Yes | 0 |

References

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